

SECRETORD-3357-66
15 August 1966**MEMORANDUM FOR THE RECORD****SUBJECT: ORD Biomedical Program**

1. The Biomedical research program proposed by ORD in support of Agency special mission requirements is basically concerned with personnel performance criteria.

2. It is understood that present criteria for personnel selection and levels of required training achievement now in effect have yielded excellent performance on current training mission tasks. However, it is also understood that the personnel selection and training performance data collected to date are not in a form which permit evaluation analysis of the procedures now in use.

3. In order to evaluate the criteria now used and in order to develop new criteria and performance monitoring techniques for the current system, as it moves into the operations phase, and for projected future systems to be developed in this permanently established area of activity, the following research program is proposed:

BIOMEDICAL PROGRAM - SPECIAL MISSION SUPPORT**A. Personnel Selection**

1. **Medical Criteria for Personnel Selection and Mission Status Maintenance**

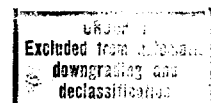
Requirement: To evaluate current medical selection criteria and to develop new or altered criteria as indicated.

Technical Description: Data collected to date will be transformed for computer analysis and correlation with special mission training achievement and operations performance. Effort will be made to correlate physical training programs with mission status achievement and maintenance.

2. **Psychological Criteria for Personnel Selection and Mission Status Maintenance**

Requirement: To evaluate current psychological selection criteria and to develop new or altered criteria as indicated.

Technical Description: Data collected to date will be transformed for computer analysis and correlation with special mission training achievement and operations performance. Effort will be made to develop psychological indices or criteria of mission status maintenance and to develop new selection criteria as indicated.

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B. Training Monitoring

1. Indices of Training Stress, Fatigue and Mission Fitness

a. Simulator Training

Requirement: To back-up fly-and-try training with extensive simulator training during which numerous indices of stress, fatigue and mission fitness will be explored for subsequent evaluation in fly-and-try testing.

Technical Description: Metabolic, physiological and psychological indices of stress, fatigue and performance decrement will be developed for evaluation in simulator training.

b. Mission Training

Requirement: To develop training mission monitoring techniques which will measure stress, fatigue and performance levels. To identify critically useful measurements which may be adapted to operations mission monitoring.

Technical Description: Techniques for measuring stress, fatigue and performance levels developed and validated in simulator training will be adapted for use in training missions. Reliability and utility ratings will be made of the various measures as potential candidates for operations mission monitoring.

2. Man-Machine Interface -- Human Factors Study

a. Life Support System Training

Requirement: To evaluate man-machine compatibility of the cockpit environment, crew protective assembly and survival assembly as tested in simulator and mission training.

Technical Description: A human factors and engineering design evaluation of the life support cockpit environment control system and emergency support systems will be made utilizing all phases of the training program as the test and evaluation method. Where necessary recommendation for altered or new engineering designs will be made.

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b. Visual and Vestibular Testing and Training

Requirement: To identify potential sources of visual and vestibular disorientation during missions.

Technical Description: Investigation of currently known or suspected sources of visual and vestibular disorientation will be expanded to include all additional possible sources. Simulator investigation and training results will be verified in training missions.

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